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REMARKS

Claims 1-26 are pending in this application.

Claim 20 is objected to.

Claims 1-19 and 21-26 are rejected.

The office action dated April 20, 2004 maintains the rejections of claims 1-3, 5-9, 14-18, 21 and 26 under 35 USC §102(b) as being anticipated by Kobayashi U.S. Patent No. 5,835,461. The office action also indicates that claims 4, 10-13, 19 and 22-24 are rejected under 35 USC §103 as being unpatentable over Kobayashi in view of others. These rejections are respectfully traversed.

"Read/write" optical discs include optical discs that allow data to be written only once and optical discs that allow data to be written many times. A DVD+RW disc is a type of read/write disc that allows data to be written many times.

When writing user data to a read/write disc, it is desirable not to create a frequency or phase discontinuity between the data being written ("new" data) and data previously written ("old" data).

Typical data recovery circuits include phase-locked loops (PLLs) for locking read clocks to user data. These circuits might not be able to tolerate frequency or phase discontinuities during readback of the old data and the new data, because the phase-locked loops cannot recover immediately from these discontinuities. It might take hundreds of clock cycles for the phase-locked loops to recover. User data would be lost while the phase-locked loops are recovering.

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The prior art suggests the use of "edit gaps" to overcome the problems resulting from these discontinuities. Edit gaps are spaces that separate data blocks. These spaces give the phase-locked loops time to recover before readback of the new data. Kobayashi also relies on edit gaps, referring to the edit gaps as "linking areas," and "postambles" and "postbuffers" between clusters of data (see column 12, lines 5-14).

The method of claim 1 avoids the use of edit gaps. Claim 1 recites a method of reading a block of data stored on an optical disc. The data block includes header information. The method comprises synthesizing header information for the data block; recovering actual header information from the disc; and recovering actual user data from the disc. The user data is phase-shifted by a phase difference between the synthesized and recovered header information.

By synthesizing header information, recovering actual header information, and using the phase difference between the two to phase shift the user data, recovery from phase discontinuities is immediate. Edit gaps are not needed.

Kobayashi does not teach or suggest a read method that can navigate through phase discontinuities. Kobayashi suggest the use of edit gaps, the very thing that the method of claim 1 avoids.

The office action cites passages in Kobayashi, but these passages are concerned with reading wobble data from a disk. Unlike user data, the wobble data is embossed (pre-recorded) in a groove of the disk. The wobble data is used to find addresses on an optical disk.

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Kobayashi describes the use of a PLL to phase-lock a write clock to wobble data. Kobayashi does not teach, hint or remotely suggest that phase discontinuities are a problem with reading wobble data.

In Kobayashi, header information is synthesized only in order to write it to the disk. However, the synthesized header information is not compared with recovered header information. Thus, Kobayashi does not teach or suggest determining a phase difference between recovered and the synthesized header information, or phase-shifting user data by that difference.

The office action cites a passage at col. 8, lines 14-17, but this passage simply states that an optical head 32 can reproduce data from reflected light from a disc 1.

The office action cites a passage at col. 8, lines 34-40, but this passage states that if the data reproduced from the disc 1 contains address data, the address data is separated and sent to a circuit 35. This passage makes no mention of user data.

The office action cites a passage at col. 8, lines 41-48, but this passage simply relates to detecting sync marks and address information on an optical disk 1. This passage makes no mention of user data.

The office action cites a passage at col. 8, lines 49-64, but this passage relates to determining whether detected pulses are caused by sync marks on the optical disk 1 or by something else. The sync marks are not user data; the sync

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marks are formed in a pregroove of the disk (see col. 5, lines 26-28 and 42-43). If the detected pulses are not supplied with a constant period, it is assumed that the detected pulses are not caused by the sync marks. Therefore, pseudo pulses are generated to prevent a PLL 41 from being locked in an incorrect phase. This passage makes no mention of user data.

The office action cites a passage from col. 8, line 65 to col. 9, line 13, but this passage describes the PLL 41. The PLL 41 locks onto a signal generated by a mark detection circuit 36 and a mark cycle detection circuit 40 (these circuits 36 and 40, which detect sync marks formed in the wobbled pregroove 2 of the optical disc 1 (col. 65, lines 41-64). A phase comparator 42 detects the phase difference between the signal generated by a VCO 44 (via divider 45) and the signal generated by the mark cycle detection circuit 40. Col. 8, line 65 to col. 9, line 6 merely describes the construction of the PLL 41. Col. 9, lines 12-13 indicate that the output of the VCO 44 is supplied to sector counter 46. The output of the PLL is a pulse train that is locked onto the sync marks (see col. 8, lines 55-59). This passage makes no mention of user data.

A sector counter 46 uses the VCO output to generate a sector start pulse (see col. 9, lines 17-20). Control circuit 38 uses this pulse to move the optical head 32 to a predetermined track position on the disc 1 (see col. 9, lines 21-25). Thus, the phase difference detected by the comparator 42 is not used to shift the user data, it is used to position the optical head 32.

The office action also cites a passage at col. 11, but the relevance is not clear.

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Nevertheless, the examiner contends that Kobayashi discloses detecting a phase difference between synthesized and recovered header information, and that user data is shifted by that difference. Since these contentions are nowhere to be found in Kobayashi, it is assumed that the examiner is relying on his personal knowledge to make the rejection. Pursuant to the MPEP §707 and 37 CFR §1.104(d)(2), the examiner is respectfully requested to submit an affidavit supporting his personal knowledge that readback circuits of optical disc drives detect a phase difference between synthesized and recovered header information, and use this phase difference to shift the phase of user data.

Thus far, the office action has provided no facts to support the examiner's contentions. The examiner's contentions might be based on his understanding of how data is read from an optical disc, or it may be based on conjecture, but the contentions are not supported by Kobayashi or any of the other documents made of record.

Because the office action provides no evidence that the prior art teaches or suggests the method of claim 1, claim 1 and its dependent claims 2-14 should be allowed over the documents made of record.

Claim 15 recites an apparatus including means for recovering actual user data from a disc, the user data being phase-shifted by a phase difference between the synthesized and actual header information. For the reasons above, claim 15 should be allowed over Kobayashi.

Claim 16 recites an apparatus including a circuit for determining a phase

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difference between recovered actual and synthesized header information; and a circuit for phase-shifting recovered user data by the determined phase difference. For the reasons above, claim 16 and its dependent claims 17-25 should be allowed over Kobayashi.

Claim 26 recites an apparatus including a circuit for determining a phase difference between recovered and synthesized header information; and a circuit for phase-shifting recovered user data by the determined phase difference. For the reasons above, claim 16 should be allowed over Kobayashi.

The examiner is respectfully requested to withdraw the rejections of the claims. If any issues remain, the examiner is invited to contact the undersigned to discuss those remaining issues.